

Amendments to the Claims:

1. (Canceled)

2. (Currently amended) The system as set forth in ~~claim 1~~ claim 8, wherein the semiconductor elements include an array of crystals selected from one of cadmium-zinc-telluride crystals and cadmium-telluride crystals.

3. (Currently amended) The system as set forth in ~~claim 1~~ claim 8, wherein the restoring means further includes:

a reverse bias means which applies a reverse bias to the identified degraded elements for a preselected time.

4. (Previously presented) The system as set forth in claim 3, wherein the restoring means further includes:

a heater, which supplies an elevated ambient temperature, when the reversed bias is applied to the identified degraded elements, to accelerate the recovery of the degraded elements.

5. (Currently amended) The system as set up forth in ~~claim 1~~ claim 8, wherein the identifying means includes a screening means which facilitates identifying degradable semiconductor elements in a batch of new semiconductor elements, the screening means including:

a forward bias means, which applies a forward bias to the semiconductor elements to induce a degradation of energy resolution; and

a heater, which increases an ambient temperature to accelerate the degradation of the energy resolution in the new semiconductor elements.

6. (Previously presented) The system as set forth in claim 5, wherein the restoring means further includes:

a reverse bias means which applies a reverse bias to the identified degraded elements for a preselected time.

7. (Previously presented) The system as set forth in claim 6, wherein the restoring means further includes:

a heater, which supplies an elevated ambient temperature, when the reversed bias is applied to the identified degraded elements, to accelerate the recovery of the degraded elements.

8. (Currently amended) ~~The A system as set forth in claim 1, for reversing degraded energy resolution of semiconductor radiation detection elements which are used in a radiation detector assembly~~ wherein the semiconductor elements of the detector assembly are responsive to gamma radiation, the system comprising:

a means for identifying semiconductor elements which exhibit degraded gamma radiation energy resolution as compared to an initial level of gamma radiation energy resolution; and

a means for restoring the degraded semiconductor elements to the initial level of gamma radiation energy resolution.

9. (Currently amended) A method of restoring a degraded performance of semiconductor elements comprising:

identifying semiconductor elements which exhibit degraded energy resolution as compared to an initial level of energy resolution by applying a forward bias to the semiconductor elements to induce a degradation of energy resolution and heating to increase an ambient temperature to accelerate the degradation of the energy resolution in the semiconductor elements; and

restoring degraded semiconductor elements to the initial level of energy resolution.

10. (Original) The method as set forth in claim 9, wherein in response to identifying a semiconductor with reduced energy resolution, a service call is placed and the step of restoring is performed by a service technician.

11. (Original) The method as set forth in claim 9, wherein restoring includes one of replacing the identified degraded semiconductor elements and restoring the identified semiconductor elements.

12. (Original) The method as set forth in claim 9, wherein during manufacture or assembly, the identified degradable semiconductor elements are grouped based on identified degradation criteria and groups with common degradation criteria are installed in a detector assembly and the restoring step is applied uniformly to the detector assembly.

13. (Canceled)

14. (Currently amended) The ~~An~~ apparatus as set forth in claim 13, ~~wherein the identifying processor includes~~ for restoring performance of semiconductor elements including:

an identifying processor to detect elements with degraded performance which results after application of forward bias, the identifying processor including a pixel analyzer which analyzes a response of each semiconductor element when the semiconductor elements are subjected to a radiation source, which pixel analyzer determines a spectral response of each semiconductor element; and

a restoration processor which controls restoration of energy resolution of degraded elements to an initial level of energy resolution.

15. (Original) The apparatus as set forth in claim 14, wherein the identifying means further includes:

a performance analyzer which compares a spectral response of each semiconductor element with preselected spectral response criteria and calculates energy resolution of each semiconductor element.

16. (Original) The apparatus as set forth in claim 15, wherein the identifying means further includes:

a threshold processor which compares a calculated energy resolution for each semiconductor element with a predetermined energy resolution for each semiconductor element to identify non-degraded and degraded semiconductor elements.

17. (Original)      The apparatus as set forth in claim 16, further including:

a reverse bias circuitry to restore the performance of degraded semiconductor elements, which reverse bias circuitry restores the performance by supplying the reverse bias to the identified degraded semiconductor elements for a preselected time.

18. (Original)      The apparatus as set forth in claim 17, further including:

a heater to raise an ambient temperature to a preselected level when the reverse bias is supplied to the degraded semiconductor elements to accelerate the restoration process.

19. (Original)      The apparatus as set forth in claim 18, further including:

a timer which monitors the application of the forward bias to the semiconductor elements for a preselected time and automatically engages the reverse bias circuitry and the heater to restore the identified degraded semiconductor elements, wherein the reverse bias circuitry and the heater are engaged for a predetermined time.

20. (Currently amended)      The apparatus as set forth in ~~claim 13~~ claim 14, wherein the forward bias is selectively supplied to semiconductor elements being selected for testing, which forward bias induces degraded performance in the tested semiconductor elements and further including:

a temperature control unit which increases an ambient temperature to accelerate performance degradation in the tested semiconductor elements.

21. (Currently amended) The apparatus as set forth in ~~claim 13~~ claim 14, wherein the semiconductor elements include an array of crystals selected from one of cadmium-zinc-telluride crystals and cadmium-telluride crystals.

22. (Currently amended) A system for ~~reversing~~ identifying degraded energy resolution of semiconductor ~~gamma~~ radiation detection elements which are used in a ~~gamma~~ radiation detector assembly, the system comprising:

a heater; and

a means for bias means, the heater and bias means configured for use in identifying semiconductor elements which exhibit degraded gamma radiation energy resolution as compared to a selectable threshold level of gamma radiation energy resolution responsive to heating and bias applied by the heater and biasing combination; and

~~a means for restoring the degraded semiconductor elements to an energy resolution above the threshold level.~~

23. (Currently amended) The system as set forth in claim 22, ~~wherein~~ the further comprising:

restoring means ~~further includes~~ including a reverse bias means which applies a reverse bias to the identified degraded elements for a preselected time.

24. (Canceled)

25. (Currently amended) The medical imaging system as set forth in ~~claim 24~~ claim 26, wherein the restoring means further includes a reverse bias means which applies a reverse bias to the identified degraded elements for a preselected time.

26. (Currently amended) ~~The~~ A medical imaging system ~~as set forth in claim 24 further comprising~~ comprising:

at least one detector comprising a plurality of semiconductor elements;

a means for identifying semiconductor elements which exhibit degraded energy resolution as compared to a selectable threshold level of energy resolution;

a means for restoring the degraded semiconductor elements to an energy resolution above the threshold level; and

screening initiation means that signals a start of a semiconductor element identification process to determine semiconductor elements which exhibit degraded energy resolution.

27. (Previously presented) The medical imaging system as set forth in claim 26 wherein the screening initiation means starts the identification process in response to a predetermined time interval, a manual maintenance initiation signal, or a system downtime signal.